www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2021; SP-10(2): 12-15

www.thepharmajournal.com
Received: 10-12-2020
Accepted: 12-01-2021

P Ravi Kumar
Assistant Professor, Veterinary Surgery and Radiology, SVVU Super Speciality Veterinary Hospital, Visakhapatnam, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

CH Mallikarjunarao
Assistant Professor, Veterinary Surgery and Radiology, SVVU Super Speciality Veterinary Hospital, Visakhapatnam, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

D Srikala
Assistant Professor, Veterinary Medicine, SVVU Super Speciality Veterinary Hospital, Visakhapatnam, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Corresponding Author:
P Ravi Kumar
Assistant Professor, Veterinary Surgery and Radiology, SVVU Super Speciality Veterinary Hospital, Visakhapatnam, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

Surgical management of gastric dilatation and volvulus in dogs

P Ravi Kumar, CH Mallikarjunarao and D Srikala

DOI: https://doi.org/10.22271/tpi.2021.v10.i2Sa.5634

Abstract
Three dogs of different breeds presented to the clinics, with a complaint of abdominal distension, respiratory distress and anorexia were diagnosed to have gastric dilatation and volvulus. The findings of the clinical examination and radiography aided in the diagnosis of the condition and the treatment was initiated immediately after diagnosis in all the cases. Stabilization of the animal was performed by administration of intravenous fluids and other supportive drugs and attempts were made to decompress the stomach by administration of stomach tube. Decompression with stomach tube didn't yield a positive result in any of the case and hence gastric decompression followed by gastric derotation was performed under general anesthesia. Out of three dogs one dog collapsed during the process of stabilization as it was presented in delay when compared to others. The other two dogs were monitored for the next four hours from the completion of surgery and then discharged from the ward. Postoperatively, antibiotics and analgesics were given besides administration of supporting drugs which showed an uneventful recovery in those two dogs.

Keywords: gastric dilatation and volvulus, gastric decompression, gastric derotation, gastropexy, deep chested breeds

Introduction
Gastric dilatation and volvulus (GDV) is a life threatening condition, characterized by abnormal gastric distension with gastric gasses and its rotation along its mesenteric axis (Bhatia *et al.* 2010) [1]. The mortality of GDV was reported as 33-68% in earlier studies (Mackenzie *et al.* 2010) [2] where as in recent reports it was 10-26.8% (Green *et al.* 2011) [3]. This condition can occur in many species including man, but it has an importance in dogs due to its frequent occurrence (Glickman *et al.* 2000) [4]. Several predisposing factors like large and giant breed dogs, deep chested dogs, laxity of gastric ligament, aerophagia, small particle size of food, heavy exercise after food etc., (Glickman *et al.* 2000) [4] have been identified, but the exact etiology for the development of this condition is still unknown (Brockman *et al.* 2000 and Tselepidis and Stournara 2008) [5, 6]. Vascular compromise resulting in gastric necrosis followed by shock and death may occur in this condition (Guilford, 1996) [7]. In the present paper, diagnosis and management of Gastric dilatation and volvulus in a three dogs belonging to different breeds has been discussed.

Case History and Observations
Three dogs belonging to different breeds were presented to the clinics of SVVU Super Speciality Veterinary Hospital, Visakhapatnam, affiliated to Sri Venkateswara Veterinary University, Tirupati with a complaint of severe abdominal distension besides respiratory distress and anorexia and the anamnesis is as listed in the table below.

A complaint of severe abdominal distension besides respiratory distress and anorexia and the anamnesis is as listed in the table below

Case	Breed	Sex	Age	Symptoms	Outcome
1.	Great Dane	Female	7	Tympanic abdomen, Respiratory distress, Retching, Recumbent, Subnormal temperature, Tachycardia	Uneventful recovery
2.	German Shepherd	Female	10	Tympanic abdomen, Respiratory distress, Retching, Recumbent, Subnormal temperature, Tachycardia and thread pulse	Died
3	Labrador Retriever	Male	9	Tympanic abdomen, Respiratory distress, Retching, Subnormal temperature, Tachycardia	Uneventful recovery

By the time of their presentation all the dogs mentioned above appeared recumbent with tympanic abdomen (Fig-1 and 2). Mild to Moderate cyanosis in mucus membranes was observed in cae-1 and 3 where as in case-2 it was severe. Double bubble appearance of the distended gas filled stomach (Fig-3 & 4) was noticed in plain lateral abdominal radiographs of Case-1 & 2 where as in case-3 the compartmentalization is partial (Fig-5) suggesting mild gastric rotation. Based on the finding of clinical examination and radiography the condition was diagnosed as Gastric dilatation and volvulus and treatment was initiated immediately.

Treatment and Discussion

Once the disease was confirmed, the dogs were stabilized with administration of Ringer lactate @ 20ml/Kg body weight, Normal saline @ 20ml/Kg body weight, Hemacel @ 5ml/Kg body weight intravenously; injection Dexamethasone @ 0.4mg/Kg body weight and injection Chlorphenaramine maleate @ 0.4mg/Kg body weight, intramuscularly. Meanwhile, the animals were kept on oxygen therapy to improve the ventilation. Attempts were made to compress the dilated stomach by administration of stomach tube but showed no result. In case-2, the dog was collapsed during the stabilization procedure as the dog was presented in delay. In the remaining two cases the animals were immediately shifted for aseptic surgery and induced anesthesia with intravenous administration of injection Ketamine hydrochloride @ 5mg/Kg body weight and injection Diazepam @ 0.5mg/Kg body weight and maintained anesthesia with Isoflurane inhalant anesthesia. The dog was placed on supine position and cranial midventral laparotomy was performed. Gastric decompression was done by performing gastrotomy (Fig-6) and the opening of the stomach was closed by double row inversion sutures using Vicryl 2-0 suture material. Focal necrotic areas were noticed over the spleen (Fig-7) along with splenic rotation. Complete gastric rotation (>270º) was observed in case-1 whereas; in case-2 it is incomplete (<180º). Gastric derotation was performed carefully and the spleen was paced in its normal position. Incisional Gastropexy (fig-8) was performed to prevent the recurrence of the condition. The laparotomy wound was closed as per the standard existing protocols. A postoperative radiograph was taken in both the operated dogs to confirm the gastric derotation (Fig-9). The oxygen therapy was continued for another four hours from completion of surgery by which time the animal appeared stable with normal vitals. Fluid therapy and oxygen therapy was given to the animals for first three days by which time the physiology of the animal appeared normal.

Postoperatively, the animals were given injection Intacef Tazo @ 25mg/Kg body weight for five days and injection Meloxicam @ 0.2 mg/Kg body weight for 3 days. Supporting drugs like multivitamin syrups were continued up to twenty postoperative days. The dogs started eating solid food normally from third postoperative day (Fig-7) and no complications were noticed during the observation period of five months.

In the present study, the condition was reported in Great Dane, German shepherd and Labrador retriever dogs, which was in concomitance with Brockman *et al.* (2000) [5] who reported that, large and giant breed dogs, increased thoracic depth to width ratio and rapid food consumption are predisposing factors for the development of GDV in dogs. The exact etiology for the development of the condition was unknown in all the cases. Glickman *et al.* (2000) [4] reported that, exercise after a huge meal may result in the present condition, but in the present study such history was not reported in any of the case. The condition was confirmed as GDV based on radiographic findings like double bubble appearance in case-1 and 2, partial compartmentalization of dilated gas filled stomach in case-3. Bhatia *et al.* (2010) [1] opined that, a right lateral radiograph of abdomen would give the information on the presence of gastric dilatation with or without volvulus; and the existence of volvulus condition could be ascertained by noticing a double chamber appearance of stomach or by the presence of pylorus dorsocranial to distended fundus. Partial compartmentalization of distended gas filled stomach noticed in lateral abdominal radiograph of case-3, suggested partial rotation of dilated stomach and the same was confirmed during laparotomy.

Gastrotomy was performed, to decompress the stomach in the dogs of present study, as the decompression by passing stomach was failed. The death noticed in German shepherd dog could be attributed to its delayed presentation. Tselepidis and Stournara (2008) [6] mentioned that, the frequency of sudden death due to GDV is more in German Sheperd dogs when compared to other breeds. Early diagnosis, affective management of the condition, proper postoperative care taken in case-1 and 3, yielded an uneventful recovery with no complications. Dujowich and Reimer (2008) [8] reported that, early recognition of GDV and rapid gastric decompression would have a good prognosis.

Fig 1: Photograph showing distended abdomen in a Great Dane dog (Case-1)

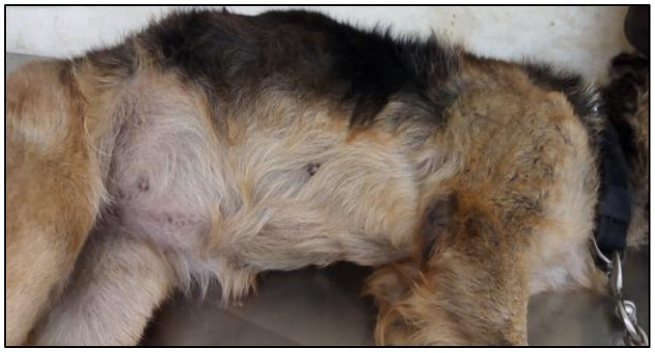

Fig 2: Photograph showing distended abdomen in a German shepherd dog (Case-2)

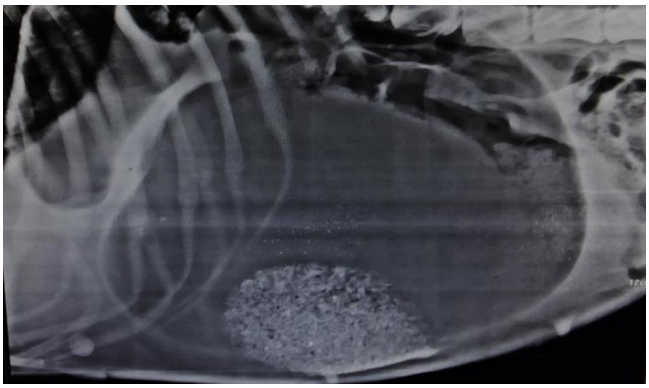

Fig 3: Skiagram showing double bubble appearance in Great Dane dog (Case-1)

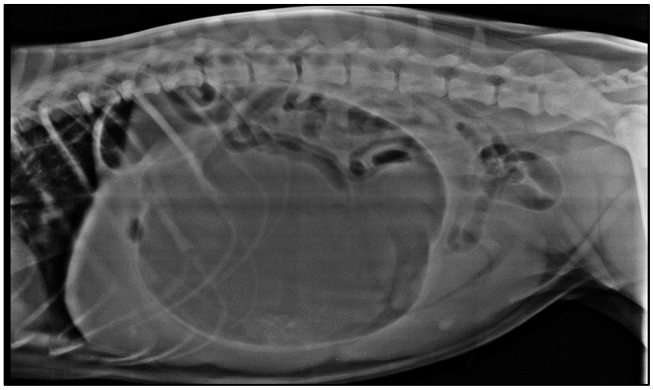

Fig 4: Skiagram showing double bubble appearance in German Shepherd dog (Case-2)

Fig 5: Skiagram showing distended gas filled stomach with partial compartmentalization (Case-3).

Fig 6: Intraoperative photograph showing gastrotomy to decompress the stomach in case-1.

Fig 7: Intraoperative photograph showing focal necrotic lesion in spleen in case-1

Fig 8: Intraoperative photograph showing incision gastropexy in case-1.

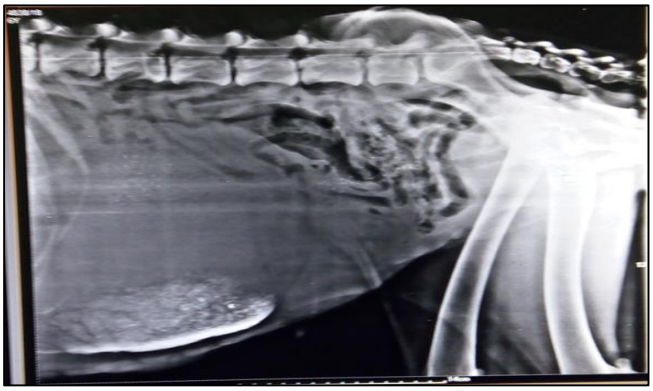

Fig 9: Immediate postoperative radiograph showing decompressed stomach in case-1

Fig 10: Photograph showing normal activity of dog (case-1 on third postoperative day

Conclusion

In the present study, uneventful recovery was noticed in two dogs which were presented earlier and death was noticed in one dog which was presented in delay. GDV is a life threatening disease and could be treated successfully if it is diagnosed earlier. Stabilization of the animal following rapid gastric decompression yields better outcome in this type of conditions.

References

1. Bhatia AS, Tank PH, Karle AS, Vedpathak HS and Dhami MA. Gastric Dilation and Volvulus Syndrome in Dog. Vet Wor, 2010;3(12):554-557.
2. Mackenzie G, Barnhart M, Kennedy S, Dehoff W, Schertel E. A retrospective study of factors influencing survival following surgery for gastric dilatation-volvulus syndrome in 306 dogs. J Am Anim Hosp Assoc 2010;46:97-102.
3. Green TI, Tonozzi CC, Kirby R, Rudloff E. Evaluation of initial plasma lactate values as a predictor of gastric necrosis and initial and subsequent plasma lactate values as a predictor of survival in dogs with gastric dilatation-volvulus: 84 dogs (2003–2007). J Vet Emerg Crit Care 2011;21:36-44.
4. Glickman LT, Lantz GC, Schellenberg DC, Glickman NW. Incidence of and breed related risk factors for gastric dilatation and volvulus in dogs. J Am Vet Med Assoc 2000;216:40.
5. Brockman DJ, Holt DE, Washabau RJ. Pathogenesis of acute canine gastric dilatation-volvulus syndrome: Is there a unifying hypothesis?. Compend Contin Educ Pract Vet 2000;22:1108-1113.
6. Tselepidis S, Stournara A. Gastric dilatation-volvulus cases in military working dogs. A retrospective study. Balkan Military Medical Review 2008;11(3):108-111.
7. Guilford WG. Gastric dilatation, gastric dilatationvolvulus, and chronic gastric volvulus. In: Guilford WG, Center SA, Strombeck DR, Williams DA, Meyer DJ (eds) Strombeck's Small Animal Gastroenterology, 3rd edn. Saunders, Philadelphia 1996, 303-315.
8. Dujowich M, Reimer SB. Evaluation of an endoscopically assisted gas tropexy technique in dogs. Amer Jour of Vet Res 2008;69:537-541.